



**THE PNC FINANCIAL SERVICES GROUP, INC. ("PNC")  
DODD-FRANK ACT COMPANY-RUN STRESS TEST DISCLOSURES  
October 11, 2017**

Pursuant to regulations issued by the Board of Governors of the Federal Reserve System ("Federal Reserve") under the Dodd-Frank Wall Street Reform and Consumer Protection Act ("Dodd-Frank Act"), PNC (NYSE: PNC) is required to conduct a mid-cycle company-run stress test in 2017 based on balance sheet information as of June 30, 2017 (the "mid-cycle stress test") and disclose certain results of the test.

***Background***

The mid-cycle stress test is a forward-looking exercise under which PNC must estimate the impact of an internally-developed, hypothetical severely adverse macroeconomic scenario on its financial condition and regulatory capital ratios over a nine-quarter period (the "stress period"). For the 2017 mid-cycle stress test, the stress period covers the period of July 1, 2017, through September 30, 2019. The test is designed to help PNC assess whether it has sufficient capital to absorb losses and support operations during hypothetical severely adverse economic conditions.

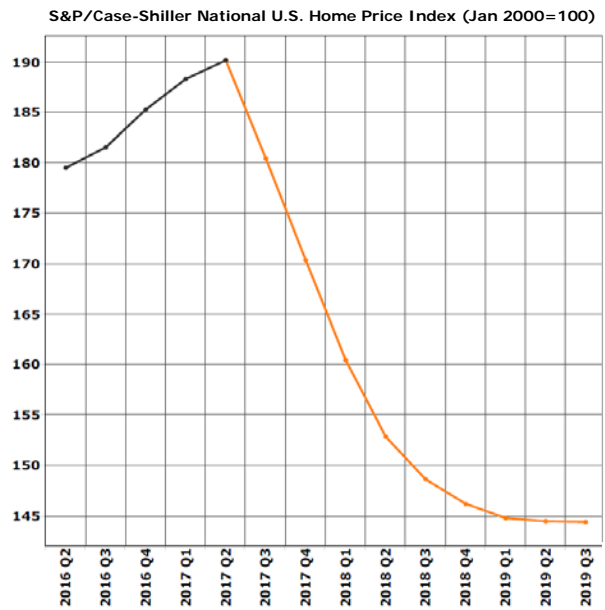
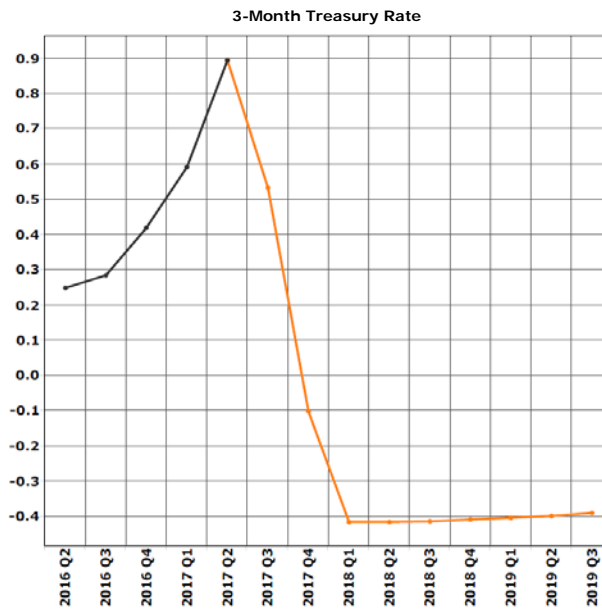
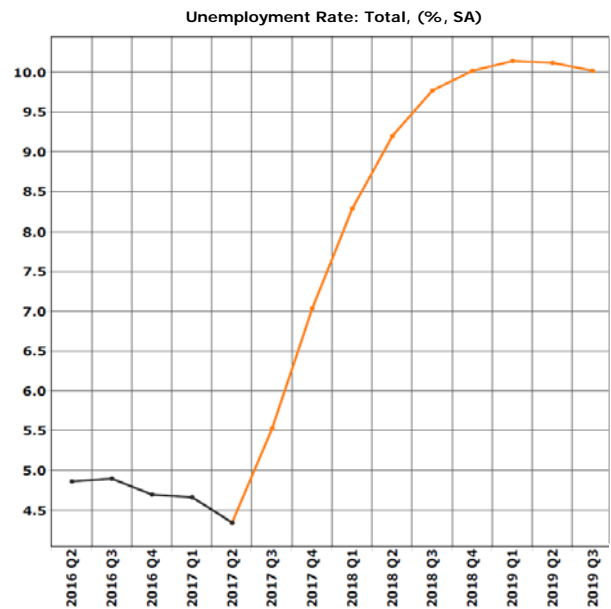
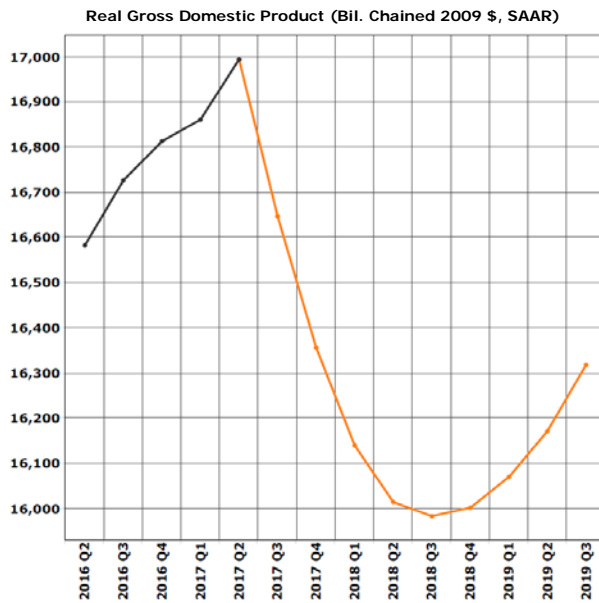
***2017 Mid-Cycle Severely Adverse Scenario***

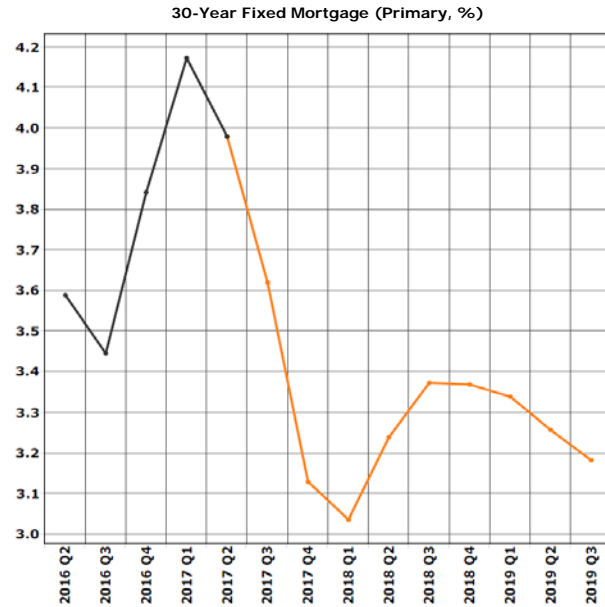
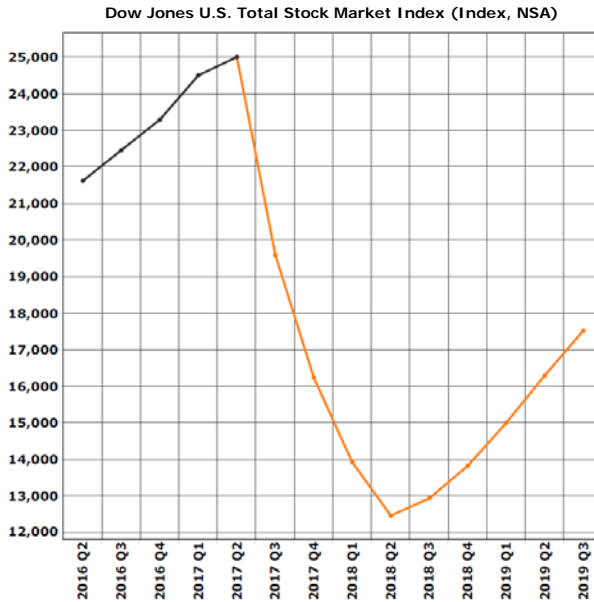
The severely adverse scenario developed by PNC for use in the 2017 mid-cycle stress test is a hypothetical scenario that involves economic conditions that are significantly more adverse than currently expected by PNC. Accordingly, the scenario is not a forecast of anticipated economic conditions, and the estimates produced under the mid-cycle stress test are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. Rather, the hypothetical severely adverse scenario is designed to help PNC assess its strength, resilience, and ability to continue to meet the needs of consumers and businesses should severe economic and financial conditions develop in the future.

The severely adverse scenario developed by PNC for the 2017 mid-cycle stress test assumes a severe U.S. economic downturn beginning in the third quarter of 2017 and lasting through the third quarter of 2018. Real gross domestic product ("GDP") falls by 5.9% from its peak in the second quarter of 2017 to the trough in the third quarter of 2018, with a weak real GDP recovery beginning in the fourth quarter of 2018. The unemployment rate increases from 4.3% in the second quarter of 2017 to a peak of 10.1% in the first quarter of 2019, and then gradually declines starting in the second quarter of 2019. Asset prices drop sharply, with housing prices (as measured by the S&P/Case-Shiller National U.S. Home Price Index) declining 24.1% from their peak in the second quarter of 2017 through the trough in the third quarter of 2019. Equity prices, as measured by the U.S. Dow Jones Total Stock Market Index, drop by 50.1% from their forecasted level at the end of the second quarter of 2017 (25,007) to a low of 12,473 in the second quarter of 2018 and then recover rapidly, reaching 17,528 by the end of the third quarter of 2019. Interest rates fall in concert with the economic downturn, with the 30-year primary mortgage rate declining to a low of 3.0% in the first quarter of 2018, and then increasing to a peak of 3.4% by the third quarter of 2018. Additionally, the 3-month Treasury bill rate falls from 0.9% in the second quarter of 2017 to a low of -0.4% in the first quarter of 2018. The following graphs depict the path of these macroeconomic variables in the

## PNC 2017 Mid-Cycle Stress Test Disclosures - 2

PNC severely adverse scenario through the stress period. The PNC severely adverse scenario for the 2017 mid-cycle stress test features a level of macroeconomic stress that is generally consistent with the supervisory severely adverse scenario used in PNC's 2017 annual company-run stress test. Data for 2016 through the first quarter of 2017 are actual.





Under applicable regulatory guidance, a firm’s severely adverse scenario is required to include elements designed to stress the firm’s potential vulnerabilities. For the 2017 mid-cycle stress test, the PNC severely adverse scenario includes a heightened level of stress applied to certain commercial and industrial (“C&I”) and commercial real estate (“CRE”) loans. Separately, the Metropolitan Statistical Areas (“MSA”) level house price indices are adjusted to have larger shocks on areas that have experienced significant “above-trend” growth in house prices in recent years, with offsetting slightly smaller shocks elsewhere. The scenario also applies additional stresses to healthcare, oil and gas (and related CRE), certain retail and education lending exposures and to borrowers that would be significantly impacted by a potential Federal government shutdown. The scenario also incorporates operational risk stresses related to legal matters, technology risk, and other idiosyncratic risks. In light of PNC’s limited trading activities, PNC’s severely adverse scenario does not include a global market shock or a counterparty default component.

**Capital Action Assumptions**

Pursuant to the Federal Reserve’s Dodd-Frank Act company-run stress test regulations (12 C.F.R. § 252.50-58), bank holding companies, including PNC, must make a uniform set of assumptions regarding capital actions over the stress period. These assumptions are designed to assist the public in comparing disclosed results across the bank holding companies subject to the tests and reduce the effect of company-specific assumptions related to capital distributions on disclosed results. Under these regulations, financial information and capital ratios are calculated for the third quarter of 2017 using the actual capital actions undertaken in that quarter. For the remaining eight quarters of the stress period, firms must assume that (i) there are no repurchases or redemptions of regulatory capital instruments; (ii) there are no issuances of common stock or preferred stock (other than equity issuances pursuant to expensed employee compensation programs); (iii) the dollar amount of quarterly common stock dividends is equal to the quarterly average dollar amount of common stock dividends paid over the course of the fourth quarter of 2016 and the first, second, and third quarters of 2017 (for PNC, the quarterly average amount of common dividends during this period was \$293 million); and (iv) payments on other regulatory capital instruments are made equal to the stated dividend, interest, or principal due. The financial information and capital ratios for PNC are calculated using the assumptions required by the Federal Reserve’s stress test regulations.

These assumptions may not represent the actual capital actions that would be taken should severely adverse economic conditions develop. For example, if the extreme economic conditions specified in the hypothetical severely adverse scenario were indeed to develop, PNC would expect to respond by adjusting its capital actions to preserve or improve its capital and liquidity (e.g., by reducing capital distributions). Moreover, the Basel III capital rules would limit the ability of a banking organization to make capital distributions and certain discretionary incentive compensation payments if the organization's actual risk-based regulatory capital levels fall below the required minimum level plus a capital conservation buffer amount that will be fully phased in as of January 1, 2019.

### ***Capital Framework for 2017 Mid-Cycle Stress Test***

As a result of the phase-in schedule (or "Transitional Provisions") of the final Basel III capital rules issued in July 2013, the actual and projected Basel III regulatory capital ratios as of June 30, 2017, and through the stress period are based on the definitions of, and deductions from, regulatory capital under the Basel III rules as such definitions and deductions are phased-in for 2017, 2018, and 2019. As a general matter, most of the definitions of, and deductions from, regulatory capital under the Basel III rules are fully phased-in as of January 1, 2018, and, thus, are reflected in the projected post-stress capital ratios calculated for 2018 and the first three quarters of 2019. For example, based on the Transitional Provisions included in the Basel III rules, the individual and aggregate deductions from Basel III Common Equity Tier 1 Capital for mortgage servicing rights, deferred tax assets, and significant common stock investments in unconsolidated financial institutions are phased-in at 80% in 2017, and are fully phased-in at 100% in 2018. The required phase-out of trust preferred securities from regulatory capital, however, will not be fully implemented until January 1, 2022. We refer to the capital ratios calculated using the Basel III Transitional Provisions during the stress period as the Transitional Basel III ratios. Risk-weighted assets used to calculate all of the projected Basel III regulatory risk-based capital ratios for PNC are based on the Basel III Standardized Approach. Additional information on the Basel III capital framework can be found in PNC's 2016 Form 10-K within the Supervision and Regulation section of Item 1 Business.

Table 1 illustrates the minimum required Transitional Basel III capital ratios in effect during the stress period:

***Table 1: Minimum Transitional Basel III Regulatory Ratios in Effect during the Stress Period***

|                                    | Minimum Transitional Basel III Regulatory Ratios in Effect |             |
|------------------------------------|--|-------------|
|                                    | 2017   | 2018 - 2019 |
| Common Equity Tier 1 Capital Ratio | 4.5%   | 4.5%        |
| Tier 1 Risk-Based Capital Ratio    | 6.0%   | 6.0%        |
| Total Risk-Based Capital Ratio     | 8.0%   | 8.0%        |
| Tier 1 Leverage Ratio              | 4.0%   | 4.0%        |
| Supplementary Leverage Ratio       | n/a  | 3.0%        |

**Detailed Results of 2017 Mid-Cycle Company-Run Stress Test**

The following tables provide the results of the 2017 mid-cycle stress test. All projections represent hypothetical outcomes under the assumed severely adverse scenario conditions and are not forecasts of expected losses, revenues, net income before taxes, risk-weighted assets, or capital ratios.

**Table 2: Actual Q2 2017 and Projected Basel III Transitional Regulatory Capital Ratios through Q3 2019 under the PNC Severely Adverse Scenario**

|                                    | Actual  | Projected Stressed Capital Ratios (a) |         |
|------------------------------------|---------|---------------------------------------|---------|
|                                    | Q2 2017 | Ending Q3 2019                        | Minimum |
| Common Equity Tier 1 Capital Ratio | 10.3%   | 8.5%                                  | 8.5%    |
| Tier 1 Risk-Based Capital Ratio    | 11.6%   | 9.8%                                  | 9.8%    |
| Total Risk-Based Capital Ratio     | 13.7%   | 12.4%                                 | 12.3%   |
| Tier 1 Leverage Ratio              | 9.9%    | 8.6%                                  | 8.4%    |
| Supplementary Leverage Ratio (b)   | 8.3%    | 7.1%                                  | 7.1%    |

(a) The capital ratios for PNC through the stress period are calculated using the capital action assumptions included in the Federal Reserve's Dodd-Frank Act stress testing rules. All risk-based regulatory capital ratios are calculated based on the Basel III Standardized Approach for the risk-weighting of assets. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. The projected minimum capital ratios presented are the minimum quarter-end ratios for the relevant metrics during the stress period.

(b) Although the supplementary leverage ratio does not take effect as a minimum regulatory capital requirement for PNC until January 1, 2018, PNC calculates and reports its supplementary leverage ratio for regulatory reporting purposes.

**Table 3: Actual Q2 2017 and Projected Q3 2019 Standardized Approach Risk-Weighted Assets under the PNC Severely Adverse Scenario for The PNC Financial Services Group, Inc.**

| In billions              | Actual Q2 2017 | Projected Q3 2019 |
|--------------------------|----------------|-------------------|
| Risk-Weighted Assets (a) | \$306.4        | \$285.5           |

(a) Risk-weighted assets are calculated under the Basel III Standardized Approach.

**Table 4: Projected Losses, Revenue, and Net Income Before Taxes for Q3 2017 through Q3 2019 under the PNC Severely Adverse Scenario for The PNC Financial Services Group, Inc.**

|   | Billions of Dollars | % of Avg Assets (a) |
|---|---------------------|---------------------|
| Pre-Provision Net Revenue (b)                     | \$ 7.2              | 2.1%                |
| Other Revenue (c)                                 | \$ (0.0)            | (0.0)%              |
| Less: Provision                                   | \$ 9.9              | 2.9%                |
| Realized (Gains)/Losses on Securities (AFS & HTM) | \$ 0.0              | 0.0%                |
| Trading and Counterparty Losses (d)               | \$ -                | -                   |
| Other Losses/(Gains) (e)                          | \$ -                | -                   |
| Equals: Net Income/(Loss) Before Taxes            | \$ <u>(2.7)</u>     | (0.8)%              |
| <b>Memo Items</b>                                 |                     |                     |
| Other Comprehensive Income (f)                    | \$ 0.5              |                     |
| <i>Other effects on capital</i>                   |                     |                     |
| Accumulated Other Comprehensive                   | Q2 2017             | Q3 2019             |
| Income included in capital (AOCI) (g)             | \$ (0.3)            | \$ (0.4)            |

(a) Average assets is the nine-quarter average of total assets.

(b) Pre-provision net revenue includes losses from operational risk events, mortgage repurchase expenses, other real estate owned ("OREO") costs, and expenses associated with the change in the allowance for unfunded commitments.

(c) Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.

(d) Trading and counterparty losses include mark-to-market losses and credit valuation ("CVA") losses. PNC's severely adverse scenario did not incorporate a global market shock or counterparty default component.

(e) Other losses/(gains) include goodwill impairment losses.

(f) Represents cumulative net change over the stress period of the following primary components of other comprehensive income ("OCI"): net unrealized gains/(losses) on available for sale securities and cash flow hedge derivatives, and adjustments related to pension and other postretirement benefit plans.

(g) For 2017 and 2018-2019, includes 80% and 100%, respectively, of the after-tax AOCI related primarily to the net unrealized gains/(losses) on available for sale securities and adjustments related to pension and other postretirement benefit plans.



**Table 5: Projected Loan Losses by Type of Loans for Q3 2017 through Q3 2019 under the PNC Severely Adverse Scenario for The PNC Financial Services Group, Inc.**

|   | Billions of Dollars | Portfolio Loss Rates (%) (a) |
|---|---------------------|------------------------------|
| <b>Loan Losses (Net Charge-offs):</b>         |                     |                              |
| First Lien Mortgage, Domestic                 | \$ 0.5              | 2.0%                         |
| Junior Lien Mortgages & HELOCs, Domestic      | \$ 1.0              | 5.0%                         |
| Commercial and Industrial (b)                 | \$ 2.3              | 3.2%                         |
| Commercial Real Estate, Domestic (c)          | \$ 1.7              | 5.4%                         |
| Credit Cards                                  | \$ 0.7              | 15.4%                        |
| Other Consumer (d)                            | \$ 0.7              | 3.2%                         |
| Other Loans (e)                               | \$ 0.6              | 2.2%                         |
| <b>Total Loan Losses (Net Charge-offs)</b>    | <b>\$ 7.5</b>       | <b>3.7%</b>                  |
| Change in Allowance for Loan and Lease Losses | \$ 2.4              |                              |
| <b>Total Provision</b>                        | <b>\$ 9.9</b>       |                              |

(a) Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

(b) Commercial and industrial loans include small- and medium-enterprise loans and corporate cards.

(c) CRE includes loans secured by farmland.

(d) Other consumer loans include student loans and automobile loans.

(e) Other loans include loans to non-profit organizations, commercial leases, other commercial loans not classified elsewhere, and international real estate loans (if any).

In the hypothetical severely adverse scenario, depressed earnings, losses and provision, and the capital actions assumed to occur reduce projected regulatory capital. The loan loss estimates in Table 5 represent estimates of the net charge-off activity recorded during the nine-quarter stress period. Wholesale Loans (Commercial and Industrial (“C&I”), Commercial Real Estate (“CRE”), and Other Loans) account for 62% of total losses, with 40% of losses originating from C&I/Other Loans and 22% from CRE. Of the remaining total losses, approximately \$1.5 billion, or 20% of total losses, are from Residential Real Estate (First and Junior Lien Mortgages and Home Equity Lines of Credit (“HELOCs”)), while Other Consumer Loans and Credit Cards together account for approximately 18% of the total losses.

Projected total provision expense is \$9.9 billion over the stress period, which provides for both the cumulative net charge-offs during the period of \$7.5 billion as well as an increase in the Allowance for Loan and Lease Losses (“ALLL”) of \$2.4 billion for expected future losses. Consistent with regulatory instructions, the projections do not take into account any estimated impact from the future adoption or implementation of Accounting Standards Update 2016-13, Financial Instruments—Credit Losses (Topic 326): *Measurement of Credit Losses on Financial Instruments*. Pre-provision net revenue (“PPNR”) of \$7.2 billion over the stress period, which reflects, among other things, a projected decline in loan balances and net interest income resulting from the economic stress in the hypothetical scenario, as well as projected losses from operational risk events, is insufficient to cover provision expense.

PNC’s Transitional Basel III Common Equity Tier 1 Capital ratio declines from 10.3% (actual) as of the second quarter of 2017 to a minimum of 8.5% at the end of the stress period. This level of decline is primarily due to losses and depressed earnings, the required assumption that historical common dividends

continue, as well as the adjustments to and deductions from Basel III Common Equity Tier 1 Capital, including those related to Accumulated Other Comprehensive Income ("AOCI"), net operating loss carry forwards, and the threshold deductions for mortgage servicing rights, deferred tax assets, and significant common stock investments in unconsolidated financial institutions, which are only partially offset by the benefit from a reduction in risk-weighted assets.

PNC's minimum 8.5% Transitional Basel III Common Equity Tier 1 Capital ratio in this mid-cycle stress test, which covers the period from the third quarter of 2017 through and including the third quarter of 2019, is higher than the 8.3% minimum ratio in PNC's 2017 annual company-run stress test results under the supervisory severely adverse scenario released in June 2017, which covered a nine-quarter period ending March 31, 2019 (the "2017 Stress Test"). This increase in the minimum ratio is driven by more favorable impacts from AOCI and capital deductions, which are partially offset by higher capital distributions, a lower starting capital position, and lower net income.

### ***Overview of PNC's Stress Test Methodology and Scenario Development***

The mid-cycle stress test conducted by PNC incorporates a broad spectrum of risks that affect PNC including, among others, credit risk, operational risk, mortgage repurchase risk, realized losses on securities, and AOCI included in capital. Credit risk represents the risk that losses will be incurred as a result of customers, counterparties, or issuers not performing in accordance with contractual terms. Credit risk primarily affects the loan classes identified in Table 5. Operational risk refers to the risk of financial loss, adverse customer experience, or negative regulatory or reputational impacts resulting from inadequate or failed internal processes or systems, human error or misconduct, or adverse external events. Operational risk losses are estimated for all businesses and segments of PNC. Mortgage repurchase risk refers to the risk of loss arising from demands or legal action initiated by mortgage investors as a result of claims that PNC breached representations or warranties in selling mortgages. Mortgage repurchase risk arises primarily in association with first-lien residential mortgages that have been sold. PNC also incorporates idiosyncratic risks that may not be fully captured through macro-economic or market-wide stresses in an effort to stress PNC's specific potential vulnerabilities.

PNC applies both quantitative and qualitative methods to project losses, balances, income, and risk-weighted assets over the stress period. PNC has continued to enhance its approach to capital stress testing through improvements to risk identification, scenario design, model development, and internal controls, as well as through an increased focus on the use of quantitative methods, and actions performed to address supervisory guidance and feedback. Estimated losses for C&I loans are primarily modeled by projecting the Probability of Default ("PD"), estimated Loss Given Default ("LGD") (taking into account available collateral and guarantees), and estimated Exposure at Default ("EAD"). The PD forecast model for C&I loans, which has five distinct segments, is based on a credit migration approach, and its inputs include macroeconomic variables and loan-level characteristics such as tenor, industry segment, and internal credit ratings. CRE losses on Construction, Stabilized, and Multifamily loans are modeled using a third-party vendor model. The inputs to the vendor model include macroeconomic variables and loan-level inputs such as repayment terms, property type, geography, loan-to-value ratio, and debt service coverage ratio. The model simulates future paths of the collateral's net operating income and market value. Along each simulation path, the conditional PD and LGD are estimated based on the forecast environment and the resulting performance metrics for each loan.



Losses for Auto loans are modeled based on a segment level regression model that forecasts PD, EAD, and LGD. For the PD component, the segmentation is based on FICO score of the borrower, loan to value ratio, new/used mix of the auto collateral, and term of the loan. A similar framework is used for several additional consumer segments, including Credit Card and Federal Student loans. Losses for small business loans are also modeled based on a segment level regression model that forecasts PD, EAD, and LGD.

For Residential Real Estate loans, including First Lien Mortgages, Junior Lien Mortgages, and Domestic HELOCs, a suite of econometric credit loss models is used to forecast expected losses at the loan level. These models use a combination of loan attributes, borrower characteristics, and macroeconomic factors to forecast expected losses over the stress period. For mortgages, there are separate models for prime/subprime, adjustable/fixed rate mortgages, and jumbo loans. For home equity, there are separate models for senior and junior lien Home Equity Installment Loans and senior and junior HELOCs. The HELOC models incorporate potential payment shock for loans reaching their end-of-draw period. There are also separate models for modified loans.

The amount of the ALLL established for stress testing purposes, at any point in time, is derived from the estimated expected future net charge-offs to be incurred. ALLL for portfolios or segments is modeled using processes similar to those for estimating losses in the relevant portfolio or segment and are calculated in accordance with the applicable regulatory guidance for stress testing. The provision expense, which includes both net charge-offs and the change in ALLL, is reflected in net income and consequently is reflected in capital levels and ratios during the period.

Projected realized losses on investment securities are estimated through Other Than Temporary Impairment ("OTTI") included in the income statement. Such losses are generally driven by declining housing prices and rising unemployment, which result in deterioration in credit quality. Generally, OTTI on Available-for-Sale ("AFS") and Held to Maturity ("HTM") securities is estimated using internally and vendor-developed models that are applied at the security level. Major inputs to the OTTI models include macroeconomic variables and collateral characteristics (if applicable); the output for each model includes projected cash flows for each security. These cash flows are then discounted at the original, credit-adjusted book yield on the security to calculate the estimated OTTI.

AOCI is estimated by projecting unrealized gains/(losses) on AFS securities and derivatives designated as cash flow hedges, and adjustments related to pension and other postretirement benefit plans. Unrealized gains/(losses) on AFS securities included in AOCI reflect projected market and book values of AFS securities which depend on maturities/run-off, interest rates, spreads, and economic conditions. PNC uses an internally developed model that leverages a third party vendor model in projecting AOCI on its AFS holdings and on forecasted security additions during the stress period. Adjustments related to the pension and other postretirement benefit plans are estimated using a third party vendor model. Unrealized gains/(losses) of derivatives designated as cash flow hedges are estimated by a model that uses maturities/run-off, new positions, and level of interest rates as inputs.

Cash flow models are used to project noninterest income and balance sheet items related to capitalized Commercial Mortgage Servicing Rights ("CMSRs") and capitalized Residential Mortgage Servicing Rights ("RMSRs") under the relevant stressed market scenario. These calculations require the projection of cash

flows over the stress period as well as the projection of any changes to the CMSR and RMSR asset fair values to be realized over the stress period.

Operational risk-related losses are estimated using the following framework. Non-legal losses are modeled within each risk segment using historical internal loss data (where such data are deemed sufficient for modeling). The models determine loss event frequencies with regression models where a significant relationship to either economic stress or business drivers can be found for the relevant risk segment. Losses are forecast as the product of this regression output and historical average loss severities per event. When a significant relationship to either economic stress or business drivers cannot be found for event frequencies, non-legal losses are estimated based on historical average losses from a stressed period for the relevant risk segment. Loss projections for legal matters are based on historical average legal losses and stressed estimates of potential outcomes on significant current, pending, or threatened matters. These framework components are supplemented by loss projections resulting from scenario analysis, with scenarios selected based on PNC's structured risk identification process.

PNC utilizes four internal models and expert judgment to construct a comprehensive, fully integrated severely adverse scenario that is benchmarked against the historical experience of recessions in the U.S. since World War II. These models include a macroeconomic model of the U.S. economy that projects approximately 100 variables, a regional model that forecasts housing prices and unemployment rates for all U.S. metropolitan areas based on projected macroeconomic and local economic conditions, and an interest rate model that forecasts approximately 40 interest rate variables including swap, treasury, mortgage, and corporate rates. A residential mortgage origination model is also used to forecast U.S. national level single family refinance and purchase mortgage originations. These four models allow for a broader set of variables to be used as modeling inputs for the balance sheet estimates, as well as for the models, assumptions, or other processes used to estimate interest and noninterest income, expense, credit loss, securities losses, and other losses over the stress period.

Estimates of loan balances over the stress period are used as inputs to the various credit models to estimate losses for each portfolio for the duration of the stress period. Additionally, the balance sheet projections serve as the primary input utilized in calculating projected risk-weighted assets for each quarter of the stress period. Risk-weighted assets are calculated under the Basel III Standardized Approach framework utilizing scenario specific projections of PNC's balance sheet and certain off-balance sheet exposures. The projected Standardized Approach risk-weighted assets are then used together with estimated levels of regulatory capital to calculate the risk-based capital ratios in Table 2.

Models are developed for many material loan and deposit balances, noninterest income and noninterest expense categories, and the scope of categories covered by models has increased over time. For all other noninterest income and noninterest expense line items, PNC employs a standardized analytical framework with a focus on sound and thoroughly documented assumptions and effective challenge provided through Line of Business, Finance, and senior management reviews. PPNR is estimated based on the net interest income projection, which is derived from balance sheet estimates and the impact of the respective interest rate and spread forecasts in the hypothetical severely adverse scenario, combined with outputs of noninterest income and noninterest expense projections.

When sufficient historical data exist, PNC builds forecasting models to support stress testing. These data reflect the performance and behavior of PNC's portfolios and business through historical periods and in different parts of the credit cycle. The models take into account macroeconomic variables and their relation to, in the case of credit models, customer credit migration, changes in delinquency status, and charge-off behavior. For some portfolios, PNC develops alternative competing models that are assessed prior to the selection of the final model to be used for the portfolio. PNC's stress testing models utilize a variety of modeling techniques and functional forms and may use different variables for different asset classes. As part of PNC's overall model risk management and stress testing processes, significant management review of the performance and fit of stress testing models is undertaken. All of the models employed by PNC to conduct the mid-cycle and annual stress test are subject to PNC's internal model risk governance framework and procedures. Additional information on PNC's Model Risk Management framework and the risks associated with the use of models can be found in PNC's 2016 Form 10-K in the Operational Risk Management section of Item 7 and Item 1A Risk Factors. When considering the appropriateness of models for stress testing, both management as well as PNC's Model Risk Management Group within Independent Risk Management consider the models' projections across the stress scenarios against the performance experienced in prior economic downturns. For a limited set of portfolios or segments, management applies overlays on model outputs in light of, among other things, actual historical performance or the particular characteristics of the portfolio or segment that may not have been reasonably reflected in the model.

PNC has established a robust governance framework to oversee its stress testing and capital planning processes, consistent with the key principles issued by the Federal Reserve for capital adequacy processes at large banking organizations. PNC's governance framework includes oversight by the Board of Directors, its Risk Committee, and senior management, including the review of internal capital goals and targets, the economic scenarios, PPNR and loss estimates utilized in the stress testing process, significant assumptions and uncertainties in the stress testing and capital planning process, and approval of capital actions. PNC's Executive Capital Committee ("ECC") is the senior management committee responsible for overseeing PNC's stress testing and capital planning process, including the review and approval of any overlays to model outputs. In considering the appropriateness and size of any such overlay, the committee may consider, among other things, the expected timing of losses, model uncertainty, internal ratings, data quality, actual historical experience of losses (including PNC historical losses in recent economic downturns), past supervisory estimates of losses and provisions, the characteristics of the specific economic scenario developed, and the evolution of the firm's business strategy or balance sheet that may influence the relevance of model results.

In addition to modeled outcomes, PNC utilizes various assumptions in estimating its income and capital ratios through the stress period. For example, we use assumptions related to projected interest rates and spreads on deposits and certain loans, forecasts for certain balance sheet items, and potential expense changes. Sensitivity analyses are conducted for key assumptions, and the results are reviewed by PNC's ECC and made available to the Board of Directors and its Risk Committee.

PNC implements a robust capital adequacy process to evaluate its capital adequacy in light of a wide range of inputs. These inputs include capital stress test results across scenarios as well as risks that may not be adequately captured by capital stress testing, such as idiosyncratic risks, liquidity risks, reputational risks, and general model risks. The Board of Directors, its Risk Committee, and senior management use the firm's

capital adequacy process to assess the appropriate level of capital for the firm to maintain in light of the range of risks it faces, the firm's business strategy, and its risk appetite.

Internal Audit employs a risk-based audit approach to help ensure comprehensive coverage of the end-to-end capital adequacy process over a multi-year period. Internal Audit conducts regular audits to assess the adequacy and effectiveness of the controls supporting PNC's capital planning and forecasting processes, including governance, qualitative assessments, the detail and quality of reporting, and the process by which deficiencies are identified and remediated. On a sample basis, as part of its risk-based approach, Internal Audit also assesses the accuracy of the spot capital data that is being relied on by senior management and the regulators and independently challenges the reasonableness of the forecasted results. The results of Internal Audit's evaluation of the framework supporting PNC's capital adequacy process are formally presented in an Audit Report, which is distributed to and considered by PNC's senior management and the Risk Committee and Audit Committee of the Board of Directors.

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